REMARKS

INTRODUCTION

In accordance with the foregoing, claims 1, 5, 6, 16, 21 and 23 have been amended. Claims 2-4, 7-12, 17-20 and 24-26 have been cancelled. Claims 1, 5, 6, 13-16, 21-23 and 27 are pending and under consideration.

CLAIM REJECTIONS

Claims 1-12, 16-20 and 27 were rejected under 35 USC 103(a) as being unpatentable over Kaite et al. (US 6,016,046) (hereinafter "Kaite") in view of Shirai et al. (US 5,550,452) (hereinafter "Shirai") and further in view of Park et al. (US 6,683,438) (hereinafter "Park").

Claims 13-15 were rejected under 35 USC 103(a) as being unpatentable over Kaite in view of Shirai and further in view of Park and Fernandez (US 6,184,651) (hereinafter "Fernandez").

Claims 21-26 were rejected under 35 USC 103(a) as being unpatentable over Kaite in view of Osawa et al. (US 6,764,373) (hereinafter "Osawa").

Kaite discusses a battery pack. In Kaite, the battery pack includes at least one rechargeable battery, a secondary coil which is magnetically coupled to a primary coil housed in a charging stand, and a control circuit which controls power induced in the secondary coil and charges the rechargeable battery. Alternating current (AC) generated in the secondary coil housed in the battery pack is controlled by the control circuit to charge the rechargeable battery. Kaite, Abstract.

Shirai discusses an induction charging apparatus. In Shirai, a depressible member 78 is normally held up and separated from the primary coil 14, so that the region above the depressible member 78 in the normal position is spaced a predetermined distance from the magnetic core 84. Thus, density of the magnetic flux 88 generated by the primary coil 14 will not be so intense above the depressible member 78. Even if some metallic object should be placed on a face 26 of the depressible member 78, very few magnetic flux 88 will intersect the paper clip, resulting in very low power consumption in the paper clip. Shirai, 5:33-5:43 and Figure 4.

In Shirai, when the face 26 is depressed by the device unit 18, the depressible member 78 slides down towards the primary coil 14 to closely couple the primary coil 14 with the secondary coil 16 via the magnetic core 84. Specifically, cylindrical engaging parts 108 are

formed at opposite ends, in the longitudinal direction, of the lower face of the depressible member 78. At each end, an urging member 106 such as a coil spring or the like is fitted. The other end of the urging member 106 is inserted in receiving recess 110 formed in the first casing 22. The depressible member 78 is urged upward by the elasticity of the urging members 106 when the device unit 18 is not coupled to the power source unit 12. Shirai, 5:44-5:57 and Figure 4.

Further in Shirai, the depressible member 78 has four guide plates 92, 94, 96, 98 extending downwardly from the four sides of the rectangular cover plate 90 which is slightly smaller than the opening 76. Each of the first and second guide plates 92, 94 as a first and a second guide means extending from opposing short sides of the cover plate 90 have approximately the same length as the depress distance of the cover plate 90. A rib 112 is formed extending outward from the lower end of each of the guide plates 92 and 94. The third and fourth guide plates 96, 98 extending respectively from opposing long sides of the cover plate 90 are slightly longer than the first and second guide plates 92 and 94. The rib 114 is provided at the same level as the rib 112 and also a guide rib 116 is arranged at further lower end of the third guide plate 96. The ribs are provided for engagement with corresponding ribs provided in the casing 22 to prevent the depressible member 78 from falling out from the casing 22, as described below. Shirai, 5:58-6:8 and Figure 4.

Claims 1-27

Amended claim 1 recites: "...if the robot moves the protrusion of the second terminal part to contact the protrusion accommodating part of the first terminal part at an angle, the elastic member deforms so that the contact surfaces of the protrusion and protrusion accommodating part come into alignment." Support for the amendments to claim 1 may be found in at least original claims 2-4, paragraphs [0032] – [0036] of the specification, and Figure 4.

As stated in the Office Action, Kaite does not discuss an elastic member elastically deformable when the robot contacts the charger. The Examiner relies on Shirai to cure this deficiency in Kaite. However, Shirai only discusses a face 26 able to be depressed by the device unit 18 by means of a depressible member 78 sliding down towards the primary coil 14. In Shirai, cylindrical engaging parts 108 are formed at opposite ends, in the longitudinal direction, of the lower face of the depressible member 78. At each end, an urging member 106 such as a coil spring or the like is fitted. The other end of the urging member 106 is inserted in receiving recess 110 formed in the first casing 22. The depressible member 78 is urged upward

by the elasticity of the urging members 106 when the device unit 18 is not coupled to the power source unit 12. As such, as is clearly shown Figure 2 of Shirai, the depressible member is only capable of traveling up or down in a longitudinal direction by means of urging members or springs 106. As such, the system of Shirai demands that the face 28 of the device unit 18 be brought into initial contact with the face 26 of the depressible member in perfect alignment or coplanar so that the device unit will not bind in power source unit 12.

By contrast, the system of claim 1 recites that if the robot moves the protrusion of the second terminal part to contact the protrusion accommodating part of the first terminal part at an angle, the elastic member deforms so that the contact surfaces of the protrusion and protrusion accommodating part come into alignment.

This technical feature of claim 1 allows that a position and angle of the robot does not need to be precisely controlled because the battery may still be charged even if the contact terminal of the robot does not precisely contact the contact terminal of the charger.

Claims 2-4, 7-12, 17-20 and 24-26 have been cancelled. Claims 5, 6, 13-16, 21-23 and 27 depend on claim 1 and are therefore believed to be allowable for at least the foregoing reasons.

Withdrawal of the foregoing rejection is requested.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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